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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,348	01/17/2002	Xiaodong Li	005158.P005	8700
29053	7590	12/05/2005	EXAMINER	
DALLAS OFFICE OF FULBRIGHT & JAWORSKI L.L.P.			BHATTACHARJEE, GOPA	
2200 ROSS AVENUE			ART UNIT	
SUITE 2800			PAPER NUMBER	
DALLAS, TX 75201-2784			2663	

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/051,348	Applicant(s) LI ET AL.	
	Examiner Gopa Bhattacharjee	Art Unit 2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-13, 15-17, 19 and 22- 32 is/are rejected.
- 7) ☒ Claim(s) 6, 14, 18, 20 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/26/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because Processing block of Figure 1 is missing number 106. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1-5, 7-13, 15-17, 19, 24-32 are rejected under 35 U.S.C. 102 as being anticipated by Jalali et al. U.S. Patent 6, 952, 454.

- Regarding claim 1, Jalali Figure 1 teaches a multi-carrier multi scribe system comprising with a transmitter and a receiver which use a multi-carrier modulation scheme ofdm, which allows for allocation and loading of data over various cluster of sub-carriers (column 8; lines 1-5, lines 50-60) and time division multiplexing the clusters (column 8, lines 1-5), (column 9, lines 1-5), (column 15, lines 5-10) . Figure 2 shows cluster of sub-channels and TDM in which data is transmitted into slots (column 13, lines 50-60). Associating one cluster from (a first set of clusters of sub-carriers) to one subscriber and associating one cluster from (a second set of clusters of sub-carriers) with second subscriber, time division multiplexing the clusters (column 9, lines 40-50), (column 15, lines 1-5).

- Regarding claim 2, Jalali teaches a method to dynamically associate resources (column 7, lines 30-35) with transmission of data over more than one sub-band and more than one period. Figure 2 Jalali teaches transmission of data over various sub-bands and over different times (column 8, lines 1-5), (column 15, lines 40-50).

- Regarding claim 3 and 4 multiplexing wherein transmission rates are weighted and weighted based on time, Jalai teaches TDM structure in which the data transmission is partitioned into time slots, with each time slot having the duration of modulation interval (column 13, lines 55-60). Dynamic allocation of circuits allows for customization of circuits to match the services being supported (column 8, lines 10-15).

- Regarding claim 5, periodically reassigning each cluster, Jalali teaches that modulation symbol to be transmitted at each time slot, on each sub-channel, can be individually and independently selected (Column 18, lines 40-45).

- Regarding claim 7, selecting the cluster based on SINR and a traffic load, Jalali teaches selection based on channel state information that includes carrier to noise plus interference ratio (C/I) information per sub-band (column 10, lines 50-60). Jalali also teaches to dynamically allocate the clusters (resources) (column 7, lines 35-40) as the load changes or the system characteristics change, the system resources may be reallocated to better match the system condition.

- Regarding claim 8 and 9, the allocation based on queue fullness of a queue and balancing the lengths of queues respectively, Jalali teaches a selection to dynamically allocate the (resources) (column 7, lines 35-40).

- Regarding claim 10 and 11, wherein assigning cluster based on quality of service requirement, where higher quality of service subscriber transmit over lower quality of service, Jalali teaches the quality of service (column 6, lines 60-65). Jalali teaches each sub-channel at each time slot may be viewed as an independent unit of transmission that can transmit any type of data (column 15, lines 25-30).

- Regarding claim 12, selection of cluster based on Bandwidth requirement, Jalali teaches, the data may be partitioned and transmitted over any defined set of two or more sub-bands each of the sub-channels may be considered as an independent data transmission channel and have a bandwidth total bandwidth/ number of sub-channel (column 8, lines 50-60).

- Regarding claim 13, associating cluster with least instantaneous delay, Jalali teaches services requiring short one way delay (column 26, lines 5-10).

- Regarding claim 14, associating cluster with least statistical delay, Jalali teaches cluster based on statistics of the users in the communication system or some other criteria (column 28, lines 20-30).

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- Regarding claim 15, multiplexing includes loading data of subscriber, Jalali explain a system multiplexing of real time services and non real time services (column 25, lines 60-65).

- Regarding claim 16 and 17, loading associates average and weighted average transmission rate of data of subscriber, Jalali explain a system where circuits may be defined based on the particular services being supported and or user requirements. High rate circuits with more tones can be assigned to high rate services and low rate circuits with fewer tones or transmitted less frequently can be assigned to low rate services (column 28, lines 20-30). Further, Jalai teaches dynamic definition of circuits allows for customization of the circuits to match the services (column 28, lines 10-15).

- Regarding claim 19, loading the data includes having a higher quality of service Jalali teaches communication scheme capable of supporting subscriber units having different requirements as well as capabilities and quality of service (qos) (column 6, lines 55-60).

- Regarding claim 24, multiplexing includes informing the time division multiplex index corresponding to the subscriber, Jalali teaches Figure 2 a TDM structure in which data is partitioned into time slot (column 13, lines 55-60) and the Figure shows the multiplexing index assigned on the time scale.

- Regarding claim 25, multiplexing includes informing the time division multiplex index for a segment corresponding to the subscriber, Jalali teaches Figure 2 a TDM structure in which data is partitioned into time slot (column 13, lines 55-60) and the Figure shows the multiplexing index assigned on the time scale. Figure 2 also shows sub-channel cluster on the frequency scale.

- Regarding claim 26, wherein the time division multiplex index corresponding to the subscriber varies between different clusters, Jalali teaches Figure 2 a TDM structure in which data is partitioned into time slot (column 13, lines 55-60) and the Figure 2 shows the multiplexing index assigned on the time scale and sub-channel cluster on the frequency scale. In Figure 2, data 1 transmission uses sub-channels 5 through 16 at time slot 2 and sub-channels 7 through 16 at time slot 7 (column 14, lines 30-35).

- Regarding claim 27, time division multiplexing index includes encoding of the index. Jalali teaches sub-channels can be used to transmit signaling, voice traffic data (column 13, lines 60-65). Figure 8B shows the packet data structure 820. Circuit identifier field 824 can provide the identity of the new circuit as well as other information (column 28, lines 60-65). Next slot i.e., time division multiplexing index information is contained in 824.

- Regarding claims 28 and 29 the data transmitting and receiving consists of a time division multiplex index for the cluster as preamble, Jalali teaches the data packet data structure Figure 8B with circuit identifier field 824 as preamble and the receiver decode the data (column 28, lines 60-65).

- Regarding claims 30 and 31 scrambling and de-scrambling of data corresponding to cluster time division multiplexing index, Jalali teaches Figure 3 encoding which may include interleaving and others (Column 16, lines 35-40).

- Regarding claim 32, a base station receive feedback information to allocate clusters of sub-carriers, Jalali teaches Figure 3 the encoder 310 (column 16, lines 35-60), channel data processor 320 which assigns data stream to one or more sub-channels at one or more time slots (column 16, lines 60- 65), (column 17, lines 1-10), sub-channel data bits are grouped into modulation symbols. Modulator 114 includes an IFFT 330. Cluster data can be time multiplexed since each individual sub-channel can be independently controlled (column 18, lines 40-45) for flexibility, performance and efficiency. Channel data processor 400 Figure 4 receive feedback information (column 13, lines 25-30) may have information about the transmission path (full CSI or partial CSI) (column 18, lines 60-65) and a demultiplexer 420 directs data bits according to the CSI.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jalali et al U.S. Patent 6, 952,454.

- Regarding claim 22 and 23, preempting a loading data and loading data having highest Qos, Jalali fails to disclose explicitly preempting the loading data based on higher quality of service. However Jalali teaches in Figure 2 operating bandwidth is shared among different services that may have highly disparate data rate, delay and quality of service (QOS) requirements (column 6, lines 60-65). Examples of disparate types of services include voice and data services. For high efficiency, the system can be designed to allocate a portion of the resources to voice services as required and the remaining resources to the data services (column 7, lines 5-15). Data processor 320 may assign one sub-channel for as many time slots as needed for that call. Data processor 320 then assigns the remaining available resources for data (Column 7, lines 5-10). One skilled in the art recognized those cluster need to be preempted before loading data. Therefore, it would have been obvious to one of ordinary skills in the art at

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the time of invention to include into Jalali invention the preempting of the cluster.

One is motivated as such in order to have an efficient use of system resources.

Allowable Subject Matter

4. Claim 6, 14, 18, 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

- Regarding claim 6, Jalali fails to suggest explicitly the allocation wherein the assignment is based on the probability of the use.

- Regarding claim 14, Jalali fails to suggest explicitly the allocation wherein the assignment is based on the statistical delay ratio.

- Regarding claim 18, loading of the data weighted based on time, Jalali fails to teach the loading criterion.

- Regarding claim 20, 21, loading the data with the lowest delay and smallest cluster index, Jalali fails to teach the loading based on lowest delay and lowest cluster index.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gopa Bhattacharjee whose telephone number is (571) 272-0778. The examiner can normally be reached on Monday through Friday from 9:00 AM to 4:30 PM ETS.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GB ANDY LEE
PATENT EXAMINER

